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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/235,686	01/22/1999	ANN XIAOAN LIU	AC06105	4330

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EXAMINER	
JACKSON, MONIQUE R	

ART UNIT	PAPER NUMBER
1773	

DATE MAILED: 11/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/235,686	LIU ET AL.	
	Examiner	Art Unit	
	Monique R. Jackson	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,11,12,16,26-29,33-35,45,46 and 48-62* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,11,12,16,26-29,33-35,45,46 and 48-62* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The amendment filed 8/18/05 has been entered. Claim 39 has been canceled. Claims 1-9, 11-12, 16, 26-29, 33-35, 45-46 and 48-62 are pending in the application.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

3. Claims 1-9, 11-12, 16, 26-29, 33-35, 45-46 and 48-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Albrinck et al (USPN 5,456,949) in view of the admitted prior art and in further view of Takahashi et al (USPN 5,928,778) or Merriam (USPN 3,661,673) or *Microspheres: Microspheres Engineered for a Wide Choice of Unique Enhancements* by 3M and Zeelan Industries, Inc. (3M and Zeelan) for the reasons recited in the prior office action and restated below.

4. Albrinck et al teach a damage resistant high pressure decorative laminate having excellent scratch, mar, scrape and abrasion resistance, as well as excellent appearance and cleanability and methods of producing same (Abstract.) The method of producing the decorative laminate includes impregnating a decorative alpha-cellulose paper with a coating formulation comprising melamine-formaldehyde resin with abrasion resistant particles having a particle size of **about 15 microns to about 45 microns** suspended in the coating formulation (Abstract; Col. 5, line 63 - Col. 6, line 5.) The abrasion resistant material is preferably alumina with the concentration of alumina particles in the resin coating formulation dependent upon the amount of surface area which needs to be covered, however for sufficient damage resistance, the concentration should be about 8-12 grams per square meter of surface area (Col. 5, lines 3-8.)

The alumina particles can be precoated with an amino silane coupling agent or may be uncoated with the silane coupling agent added to the resin mixture (Col. 5, lines 8-14.) The resin impregnated decorative sheet is then further coated or saturated with an overcoat of a "neat" melamine formaldehyde resin coating formulation which does not contain any abrasion resistant alumina particles or in the alternative contains abrasion resistant particles that are smaller than the particles used in the first coat, of about 3 microns, wherein Albrinck et al include an example showing that when the abrasion resistant particles are included in the overcoat, the scratch resistance is improved (*wherein the Examiner notes that "about 3 microns" reads upon the instantly claimed "about 5 microns";* Abstract; Col. 6, lines 14-20; Examples; Table II.) The damage resistant decorative laminate may be produced either with or without an intermediate drying step between the initial coating and the subsequent overcoat (Col. 6, lines 28-32.) The coated decorative paper and at least one backing sheet is dried and then heat and pressure consolidated using conventional laminating techniques into a damage resistant high pressure decorative laminate having excellent scratch, mar, scrape and abrasion resistance as well as a uniform appearance and excellent cleanability (Col. 6, lines 33-38.) Albrinck et al further teach that conventional high pressure decorative laminates are made of two essential layers, a core layer and a surface layer, wherein the core layer normally consists of a plurality of cellulosic sheets generally made from a kraft paper impregnated with a laminating resin (Col. 1, lines 19-25.) Placed above the core layer is the decorative layer which is generally an alpha cellulose paper impregnated with a melamine-formaldehyde resin (Col. 1, lines 31-35.) The laminates are used as surfacings for counter tops, table tops, furniture, store fixtures, etc. (Col. 1, lines 65-66.)

5. Albrinck et al do not specifically teach the temperature and pressure at which consolidation is performed however, as admitted by the Applicant as prior art, it is well known in the art that high pressure laminates are produced at a temperature of 230-340°F and a pressure of 800-1600 psi (Page 3, lines 1-10.) Additionally, it is well known in the art that these laminate films are typically used as surface material for materials comprising wood, for non-limiting example, particleboard, medium density fiberboard, composite panel and other wood-based materials (Page 2, lines 8-11.)

6. Albrinck et al also do not specifically teach that the abrasion resistant particles are microspheres or substantially spherical, are present in an amount of about 0.5 to 4.75% of the thermosetting resin after drying, and provide a scratch resistance of at least about 2.5 Newtons as measured by the Teledyne Taber Scrach Tester. However, Takahashi et al teach the use of spherical particles in a thermosetting coating for a decorative article wherein Takahashi et al specifically teach that the **spherical shape** of the particles provides greatly improved abrasion resistance **as compared with particles in an indeterminate form** made of the same material, and, at the same time, produces the following characteristic effects: the spherical particles do not wear a coating applicator used, the hardened coating layer also does not wear those things which are brought into contact with the coating layer, and the coating layer has improved transparency (Col. 4, lines 5-15.) Takahashi et al further teach that the abrasion-resistant coating includes a crosslinkable resin and 5% to 50% by weight spherical particles having an average diameter of 3 to 50 micrometers (Abstract) and that the spherical particles have a hardness greater than the resin and may be selected from fused alumina, alumina produced by the Bayer process, zirconia, titania, organic resin particles, and preferably alpha-alumina, because alpha-alumina has an

extremely high hardness and can impart high abrasion resistance to the resulting coating layer and can be readily obtainable in a spherical shape (Abstract; Col. 3, lines 5-13; Col. 4, lines 32-41.) Takahashi et al also teach that it is preferable that the hardness of the spherical particles be greater by at least 1 or more in terms of the Mohs hardness scale than the crosslinkable resin and that the spherical particles can be inorganic or organic resin (Col. 4, lines 16-28.) The abrasion resistant coating can be applied to a number of substrates including paper, woodboards, particle board, medium density fiber board, FRP boards which are obtained by impregnating various fibrous substrates such as paper with a resin such as phenolic or melamine, or a composite substrate obtained by laminating two or more substrates (Col. 2, lines 1-67.)

7. Further, 3M and Zeelan teach that microspheres offer a variety of inherent advantages over many traditional irregularly shaped mineral fillers such as improved flow, lower resin demand, low viscosity/high filler loading, and reduced warpage and shrinkage (Page 2, Col. 1.) Further, 3M and Zeelan teach that ZEEOSPHERES™ Ceramic Microspheres are ideal options for hardness and abrasion resistance, gloss control, and corrosion resistance, or if you need a fine particle size filler. In particular, they teach an alkali alumino silicate ceramic microsphere which is commercially available as ZEEOSHERES W-610 and is a semi-transparent, white colored, fine particle size, high strength, high hardness ceramic microsphere. 3M and Zeelan also teach that ZEEOSPHERES™ Ceramic Microspheres can help reduce VOCs, and help improve hardness, corrosion resistance, and abrasion resistance of high solids industrial coatings.

8. In addition, Merriam teach that a surface impregnating resin comprising glass beads can provide improved abrasion resistance if the glass beads **are of a substantially spherically shaped configuration as opposed to irregularly shaped particles** having sharp edges or

corners thereon and that the amount of the glass beads affects the resulting abrasion resistance obtained (Figure 2, Col. 3, lines 57-74; Col. 3, line 70-Col. 4, line 10.)

9. Hence, based on the teachings of Takahashi et al, 3M and Zeelan, and/or Merriam, one having ordinary skill in the art at the time of the invention would have been motivated to utilize spherical particles as opposed to other shaped particles in the invention taught by Albrinck et al to provide improved abrasion resistance and further to utilize routine experimentation to determine the type, size and amount of the spherical abrasion resistant particles to provide the desired abrasion and scratch resistance for a particular end use, including any of the abrasion resistant particles taught by the cited prior art.

Response to Arguments

10. Applicant's arguments filed 8/18/05 have been fully considered but they are not persuasive. The Examiner first notes that the Applicant appears to argue the references separately. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The Applicant further argues that the references are nonanalogous art and that there is no suggestion to combine the references. In response to applicant's argument that the references are nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, all of the references are reasonably

pertinent to the particular problem, namely improving scratch and abrasion resistance of coatings. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention. where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the primary reference Albrinck et al teaches impregnating the substrate with a first resin comprising abrasion resistant particles and then further coating the substrate with a second resin that may also comprise abrasion resistant particles. The main difference between the Albrinck et al reference and the instant invention is the shape of the abrasion resistant particles wherein Albrinck et al do not specifically teach a shape while the instant invention calls for particles having a substantially spherical shape. The Examiner has shown via the secondary references that abrasion resistant particles having a spherical shape provide improvements in terms of abrasion and scratch resistance over particles of an indeterminate shape and hence, based on the teachings of the secondary references, one skilled in the art at the time of the invention would have been motivated to utilize spherical particles as instantly claimed. In terms of the Takahashi et al, the Examiner would like to note that Takahashi et al does not teach away from the instant invention as argued by the Applicant. Takahashi et al teach that in general, when a substrate into which the coating will not penetrate is used, that directly coating of the substrate is suitable; and that it is however **preferable** to adopt a transfer coating method when a material into which the coating penetrates or which has a rough surface, **in order to obtain** a

coating layer with **uniform thickness**, and to **uniformly impart abrasion resistance** to the coating layer. Hence, Takahashi et al does not teach away from Albrinck et al in terms of an impregnating step as argued by the Applicant. With regards to the particle size and particle concentration, the Examiner maintains that one having ordinary skill in the art at the time of the invention would have been motivated to utilize routine experimentation to determine the size and amount of the spherical abrasion resistant particles to provide the desired abrasion and scratch resistance for a particular end use, given the absence of a clear showing of **unexpected** results.

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monique R Jackson whose telephone number is 571-272-1508. The examiner can normally be reached on Mondays-Thursdays, 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on 571-272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Monique R. Jackson
Primary Examiner
Technology Center 1700
November 28, 2005